cnt F3 granules with interconnected micropores in said structure, wherein said uniformly stabilized calcium phosphate phases are developed by the conversion of a hydroxyapatite substance uniformly doped with stabilizing entities at sintering temperatures into stabilized tricalcium phosphate phases, wherein said uniformly stabilized tricalcium phosphate is insoluble in physiological fluids.

Sub G 27. (Twice amended) An implantable calcified bone matrix comprising:

a) a structure for supporting said matrix;

F4 b) a layer of uniformly stabilized tricalcium phosphate phases developed by the conversion of a hydroxyapatite substance uniformly doped with stabilizing entities at sintering temperatures into uniformly stabilized tricalcium phosphate where said stabilizing entities insolubilize and stabilize the tricalcium phosphate phases;

c) a boundary layer deposited by osteoblasts cultured on said layer of stabilized tricalcium phosphate phases; and

d) a mineralizing collagenous matrix secreted by such cultured osteoblasts.

Please add the following new claims:

F5 39. A bioactive artificial sintered composition for consistently supporting bone cell activity, said composition comprising uniformly stabilized tricalcium phosphate having stabilizing entities selected from the group consisting of silicon entities, aluminum entities, barium entities, titanium entities, germanium entities, chromium entities, vanadium entities, niobium entities, boron entities and mixtures thereof distributed uniformly throughout, wherein said uniformly stabilized tricalcium phosphate is insoluble in physiological fluids.

40. A process for stabilizing an artificial sintered composition of tricalcium phosphate phases having a morphology suitable for supporting bone cell activity, said process comprising:

uniformly doping a hydroxyapatite substance with stabilizing entities selected from the group consisting of silicon entities, aluminum entities, barium entities, titanium entities, germanium entities, chromium entities, vanadium entities, niobium entities, boron entities and mixtures thereof; and

sintering said uniformly doped hydroxyapatite substance,

wherein sintering converts said uniformly doped hydroxyapatite substance into primarily uniformly stabilized tricalcium phosphate which is insoluble in physiological fluids and said stabilizing entities stabilize the formed tricalcium phosphate within the phosphate phases.

cnt F3

41. A sintered artificial microporous polycrystalline structure for supporting bone cell activity, said structure comprising sintered uniformly stabilized calcium phosphate phases having a globular surface morphology of loosely interconnected rounded granules with interconnected micropores in said structure, wherein said uniformly stabilized tricalcium phosphate phases are developed by the conversion of a hydroxyapatite substance uniformly doped with stabilizing entities selected from the group consisting of silicon entities, aluminum entities, barium entities, titanium entities, germanium entities, chromium entities, vanadium entities, niobium entities, boron entities and mixtures thereof at sintering temperatures into stabilized tricalcium phosphate phases, wherein said uniformly stabilized tricalcium phosphate is insoluble in physiological fluids.

42. An implantable calcified bone matrix comprising:

a) a structure for supporting said matrix;

b) a layer of uniformly stabilized tricalcium phosphate phases developed by the conversion of a hydroxyapatite substance uniformly doped with stabilizing entities selected from

the group consisting of silicon entities, aluminum entities, barium entities, titanium entities, germanium entities, chromium entities, vanadium entities, niobium entities, boron entities and mixtures thereof at sintering temperatures into uniformly stabilized tricalcium phosphate where said stabilizing entities insolubilize and stabilize the tricalcium phosphate phases;

c) a boundary layer deposited by osteoblasts cultured on said layer of stabilized tricalcium phosphate phases; and

cont F5

d) a mineralizing collagenous matrix secreted by such cultured osteoblasts.

43. A bulk ceramic microporous structure made with the composition of Claim 39.

44. An implantable device coated with the sintered composition of Claim 39.

45. An implantable device consisting essentially of the composition of Claim 39.

46. A method for the culturing of functional bone cells, said method comprising applying a suspension of bone cells in physiological media at a suitable physiological temperature to an artificial sintered composition of Claim 39.